

Appendix D

Glossary

A

AAL	ATM adaptation layer. A series of protocols enabling various types of traffic, including voice, data, image, and video, to run over an ATM network.
ADM	Add/drop multiplexer. SONET functionality that allows lower-level signals to be dropped from a high-speed optical connection.
ANSI	American National Standards Institute. The United States' representative to the ISO.
ARP	Address Resolution Protocol. Protocol for mapping IP addresses to MAC addresses.
AS	Autonomous system. Set of routers under a single technical administration. Each AS normally uses a single interior gateway protocol (IGP) and metrics to propagate routing information within the set of routers. Also called <i>routing domain</i> .
ASIC	Application-specific integrated circuit. Specialized processors that perform specific functions on the router.
ATM	Asynchronous Transfer Mode. A high-speed multiplexing and switching method utilizing fixed-length cells of 53 octets to support multiple types of traffic.
autonomous system	<i>See AS.</i>

B

bandwidth	The range of transmission frequencies a network can use, expressed as the difference between the highest and lowest frequencies of a transmission channel. In computer networks, greater bandwidth indicates faster data-transfer rate capacity.
Belcore	Bell Communications Research. Research and development organization created after the divestiture of the Bell System. It is supported by the regional Bell holding companies (RBHCs), which own the regional Bell operating companies (RBOCs).
BERT	Bit error rate test. A test that can be run on a T3 interface to determine whether it is operating properly.
BGP	Border Gateway Protocol. Exterior gateway protocol used to exchange routing information among routers in different autonomous systems.
bit error rate test	<i>See BERT.</i>
BITS	Building Integrated Timing Source. Dedicated timing source that synchronizes all equipment in a particular building.

Border Gateway Protocol *See BGP.*

broadcast Operation of sending network traffic from one network node to all other network nodes.

bundle Collection of software that makes up a JUNOS software release.

C

CB Control Board. Part of the host subsystem that provides control and monitoring functions for router components.

CE device Customer edge device. Router or switch in the customer's network that is connected to a service provider's provider edge (PE) router and participates in a Layer 3 VPN.

CFM Cubic feet per minute. Measure of air flow in volume per minute.

channel service unit *See CSU/DSU.*

CIDR Classless interdomain routing. A method of specifying Internet addresses in which you explicitly specify the bits of the address to represent the network address instead of determining this information from the first octet of the address.

CIP Connector Interface Panel. Contains connectors for the Routing Engine ports and alarm relay contacts.

class of service *See CoS.*

CLEC (Pronounced "see-lek") Competitive Local Exchange Carrier. Company that competes with the already established local telecommunications business by providing its own network and switching.

CLEI Common language equipment identifier. Inventory code used to identify and track telecommunications equipment.

CLI Command-line interface. Interface provided for configuring and monitoring the routing protocol software.

community In BGP, a group of destinations that share a common property. Community information is included as one of the path attributes in BGP update messages.

confederation In BGP, a group of systems that appears to external autonomous systems to be a single autonomous system.

constrained path In traffic engineering, a path determined using RSVP signaling and constrained using CSPF. The ERO carried in the packets contains the constrained path information.

Control Board *See CB.*

core The central backbone of the network.

CoS Class of service. A group of privileges and features assigned to a particular service.

CPE Customer premises equipment. Telephone or other service provider equipment located at a customer site.

craft interface	Mechanisms used by a Communication Workers of America craftsman to operate, administer, and maintain equipment or provision data communications. On a Juniper Networks router, the craft interface allows you to view status and troubleshooting information and perform system control functions.
CSU/DSU	Channel service unit/data service unit. Channel service unit connects a digital phone line to a multiplexer or other digital signal device. Data service unit connects a DTE to a digital phone line.
customer edge device	<i>See CE de vice.</i>
D daemon	Background process that performs operations on behalf of the system software and hardware. Daemons normally start when the system software is booted, and they run as long as the software is running. In the JUNOS software, daemons are also referred to as processes.
data circuit-terminating equipment	<i>See DCE.</i>
data-link connection identifier	<i>See DLCI.</i>
data service unit	<i>See CSU/DSU.</i>
Data Terminal Equipment	<i>See DTE.</i>
dcd	The JUNOS software interface process (daemon).
DCE	Data circuit-terminating equipment. RS-232-C device, typically used for a modem or printer, or a network access and packet switching node.
default address	Router address that is used as the source address on unnumbered interfaces.
denial of service	<i>See DoS.</i>
dense wavelength-division multiplexing	<i>See DWDM.</i>
DHCP	Dynamic Host Configuration Protocol. Allocates IP addresses dynamically so that they can be reused when they are no longer needed.
Dijkstra algorithm	<i>See SPF.</i>
DIMM	Dual inline memory module. 168-pin memory module that supports 64-bit data transfer.
direct routes	<i>See interface routes.</i>
DLCI	Data-link connection identifier. Identifier for a Frame Relay virtual connection (also called a logical interface).
DoS	Denial of service. System security breach in which network services become unavailable to users.
DRAM	Dynamic random-access memory. Storage source on the router that can be accessed quickly by a process.

- drop profile** Drop probabilities for different levels of buffer fullness that are used by RED to determine from which queue to drop packets.
- DSU** Data service unit. A device used to connect a DTE to a digital phone line. Converts digital data from a router to voltages and encoding required by the phone line. *See also CSU/DSU*.
- DTE** Data Terminal Equipment. RS-232-C interface that a computer uses to exchange information with a serial device.
- DVMRP** Distance Vector Multicast Routing Protocol. Distributed multicast routing protocol that dynamically generates IP multicast delivery trees using a technique called reverse path multicasting (RPM) to forward multicast traffic to downstream interfaces.
- DWDM** Dense wavelength-division multiplexing. Technology that enables data from different sources to be carried together on an optical fiber, with each signal carried on its own separate wavelength.

Dynamic Host Configuration Protocol *See DHCP.*

E

- ECSA** Exchange Carriers Standards Association. A standards organization created after the divestiture of the Bell System to represent the interests of interexchange carriers.
- EGP** Exterior gateway protocol, such as BGP.
- EIA** Electronic Industries Association. A United States trade group that represents manufacturers of electronics devices and sets standards and specifications.
- EMI** Electromagnetic interference. Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics or electrical equipment.

explicit path *See signaled path*.

export To place routes from the routing table into a routing protocol.

F

- FEAC** Far-end alarm and control. T3 signal used to send alarm or status information from the far-end terminal back to the near-end terminal and to initiate T3 loopbacks at the far-end terminal from the near-end terminal.

Flexible PIC Concentrator *See FPC.*

forwarding information base *See forwarding table.*

forwarding table JUNOS software forwarding information base (FIB). The JUNOS routing protocol process installs active routes from its routing tables into the Routing Engine forwarding table. The kernel copies this forwarding table into the Packet Forwarding Engine, which is responsible for determining which interface transmits the packets.

FPC Flexible PIC Concentrator. An interface concentrator on which PICs are mounted. An FPC inserts into a slot in a Juniper Networks router. *See also PIC.*

FRU Field-replaceable unit. Router component that customers can replace onsite.

H

HDLC High-level data link control. An International Telecommunication Union (ITU) standard for a bit-oriented data link layer protocol on which most other bit-oriented protocols are based.

hold time Maximum number of seconds allowed to elapse between the time a BGP system receives successive keepalive or update messages from a peer.

host subsystem Provides routing and system-management functions of the router. Consists of a Routing Engine and an adjacent Control Board (CB).

I

IANA Internet Assigned Numbers Authority. Regulatory group that maintains all assigned and registered Internet numbers, such as IP and multicast addresses. *See also NIC*.

ICMP Internet Control Message Protocol. Used in router discovery, ICMP allows router advertisements that enable a host to discover addresses of operating routers on the subnet.

IDE Integrated Drive Electronics. Type of hard disk on the Routing Engine.

IEC International Electrotechnical Commission. *See ISO*.

IEEE Institute of Electronic and Electrical Engineers. International professional society for electrical engineers.

IETF Internet Engineering Task Force. International community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet.

IGMP Internet Group Membership Protocol. Used with multicast protocols to determine whether group members are present.

IGP Interior gateway protocol, such as IS-IS, OSPF, and RIP.

import To install routes from the routing protocols into a routing table.

interface routes Routes that are in the routing table because an interface has been configured with an IP address. Also called *direct routes*.

IP Internet Protocol. The protocol used for sending data from one point to another on the Internet.

IPSec Internet Protocol Security. The industry standard for establishing VPNs, IPSec comprises a group of protocols and algorithms that provide authentication and encryption of data across IP-based networks.

IS-IS Intermediate System-to-Intermediate System protocol. Link-state, interior gateway routing protocol for IP networks that also uses the shortest-path first (SPF) algorithm to determine routes.

ISO International Organization for Standardization. Worldwide federation of standards bodies that promotes international standardization and publishes international agreements as International Standards.

ISP Internet service provider. Company that provides access to the Internet and related services.

ITU International Telecommunications Union (formerly known as the CCITT). Group supported by the United Nations that makes recommendations and coordinates the development of telecommunications standards for the entire world.

J

jitter Small random variation introduced into the value of a timer to prevent multiple timer expirations from becoming synchronized.

K

kernel forwarding table *See forwarding table.*

L

label-switched path (LSP) Sequence of routers that cooperatively perform MPLS operations for a packet stream. The first router in an LSP is called the *ingress router*, and the last router in the path is called the *egress router*. An LSP is a point-to-point, half-duplex connection from the ingress router to the egress router. (The ingress and egress routers cannot be the same router.)

label switching *See MPLS.*

label-switching router *See LSR.*

link Communication path between two neighbors. A link is *up* when communication is possible between the two end points.

link-state PDU (LSP) Packets that contain information about the state of adjacencies to neighboring systems.

LSP *See label-switched path (LSP) and link-state PDU (LSP).*

LSR Label-switching router. A router on which MPLS and RSVP are enabled and is thus capable of processing label-switched packets.

M

mask *See subnet mask .*

MBone Internet multicast backbone. An interconnected set of subnetworks and routers that support the delivery of IP multicast traffic. The MBone is a virtual network that is layered on top of sections of the physical Internet.

MED Multiple exit discriminator. Optional BGP path attribute consisting of a metric value that is used to determine the exit point to a destination when all other factors in determining the exit point are equal.

mesh Network topology in which devices are organized in a manageable, segmented manner with many, often redundant, interconnections between network nodes.

MIB Management Information Base. Definition of an object that can be managed by SNMP.

midplane Forms the rear of the FPC card cage . Provides data transfer, power distribution, and signal connectivity.

MPLS Multiprotocol Label Switching. Mechanism for engineering network traffic patterns that functions by assigning to network packets short labels that describe how to forward them through the network. Also called *label switching*. *See also traffic engineering .*

MTBF Mean time between failure. Measure of hardware component reliability.

MTU	Maximum transfer unit. Limit on packet size for a network.
multicast	Operation of sending network traffic from one network node to multiple network nodes.
Multiprotocol Label Switching	<i>See MPLS.</i>
N	
neighbor	Adjacent system reachable by traversing a single subnetwork. An immediately adjacent router. Also called a <i>peer</i> .
NET	Network entity title. Network address defined by the ISO network architecture and used in CLNS-based networks.
Network Time Protocol	<i>See NTP.</i>
NIC	Network Information Center. Internet authority responsible for assigning Internet-related numbers, such as IP addresses and autonomous system numbers. <i>See also IANA.</i>
NSAP	Network service access point. Connection to a network that is identified by a network address.
n-selector	Last byte of a nonclient peer address.
NTP	Network Time Protocol. Protocol used to synchronize computer clock times on a network.
O	
OC	Optical Carrier. In SONET, Optical Carrier levels indicate the transmission rate of digital signals on optical fiber.
OSI	Open System Interconnection. Standard reference model for how messages are transmitted between two points on a network.
OSPF	Open Shortest Path First. A link-state IGP that makes routing decisions based on the shortest-path-first (SPF) algorithm (also referred to as the <i>Dijkstra algorithm</i>).
P	
package	A collection of files that make up a JUNOS software component.
Packet Forwarding Engine	The architectural portion of the router that processes packets by forwarding them between input and output interfaces.
PCI	Peripheral Component Interconnect. Standard, high-speed bus for connecting computer peripherals. Used on the Routing Engine.
PCMCIA	Personal Computer Memory Card International Association. Industry group that promotes standards for credit card-size memory or I/O devices.
PDU	Protocol data unit. IS-IS packets.
PE router	Provider edge router. A router in the service provider's network that is connected to a customer edge (CE) device and that participates in a Virtual Private Network (VPN).
peer	An immediately adjacent router with which a protocol relationship has been established. Also called a <i>neighbor</i> .

	PFE	<i>See Packet Forwarding Engine .</i>
	Physical Interface Card	<i>See PIC .</i>
	PIC	Physical Interface Card. A network interface–specific card that can be installed on an FPC in the router.
	PIM	Protocol Independent Multicast. A protocol-independent multicast routing protocol. PIM Sparse Mode routes to multicast groups that might span wide-area and interdomain internets. PIM Dense Mode is a flood-and-prune protocol.
	PLP	Packet Loss Priority.
	policing	Applying rate limits on bandwidth and burst size for traffic on a particular interface.
	PPP	Point-to-Point Protocol. Link-layer protocol that provides multiprotocol encapsulation. It is used for link-layer and network-layer configuration.
	preference	Desirability of a route to become the active route. A route with a lower preference value is more likely to become the active route. The preference is an arbitrary value in the range 0 through 255 that the routing protocol process uses to rank routes received from different protocols, interfaces, or remote systems.
	primary interface	Router interface that packets go out when no interface name is specified and when the destination address does not imply a particular outgoing interface.
	Protocol-Independent Multicast	<i>See PIM.</i>
	provider edge router	<i>See PE router.</i>
	provider router	Router in the service provider’s network that does not attach to a customer edge (CE) device.
Q	QoS	Quality of service. Performance, such as transmission rates and error rates, of a communications channel or system.
	quality of service	<i>See QoS .</i>
R	RADIUS	Remote Authentication Dial-In User Service. Authentication method for validating users who attempt to access the router using Telnet.
	Random Early Detection	<i>See RED .</i>
	rate limiting	<i>See policing .</i>
	RBOC	(Pronounced “are-bock”) Regional Bell operating company. Regional telephone companies formed as a result of the divestiture of the Bell System.
	RDRAM	RAMBUS dynamic random access memory.

RED	(Pronounced “red”) Random Early Detection. Gradual drop profile for a given class that is used for congestion avoidance. RED tries to anticipate incipient congestion and reacts by dropping a small percentage of packets from the head of the queue to ensure that a queue never actually becomes congested.
Resource Reservation Protocol	<i>See RSVP.</i>
RFC	Request for Comments. Internet standard specifications published by the Internet Engineering Task Force.
RFI	Radio frequency interference. Interference from high-frequency electromagnetic waves emanating from electronic devices.
RIP	Routing Information Protocol. Distance-vector interior gateway protocol that makes routing decisions based on hop count.
routing domain	<i>See AS.</i>
Routing Engine	Architectural portion of the router that handles all routing protocol processes, as well as other software processes that control the router’s interfaces, some of the chassis components, system management, and user access to the router.
routing table	Common database of routes learned from one or more routing protocols. All routes are maintained by the JUNOS routing protocol process.
rpd	JUNOS software routing protocol process (daemon). User-level background process responsible for starting, managing, and stopping the routing protocols on a Juniper Networks router.
RPM	Reverse path multicasting. Routing algorithm used by DVMRP to forward multicast traffic.
RSVP	Resource Reservation Protocol. Resource reservation setup protocol designed to interact with integrated services on the Internet.
S	SAP Session Announcement Protocol. Used with multicast protocols to handle session conference announcements.
	SAR Segmentation and reassembly. Buffering used with ATM.
	SCG SONET Clock Generator. Provides Stratum 3 clock signal for the SONET/SDH interfaces on the router. Also provides external clock inputs.
	SDH Synchronous Digital Hierarchy. CCITT variation of SONET standard.
	SDP Session Description Protocol. Used with multicast protocols to handle session conference announcements.
	SDRAM Synchronous dynamic random access memory.
	secure shell <i>See SSH.</i>
shortest-path-first algorithm	<i>See SPF.</i>

	SIB	Switch Interface Board. Provides the switching function to the destination Packet Forwarding Engine.
	simplex interface	An interface that assumes that packets it receives from itself are the result of a software loopback process. The interface does not consider these packets when determining whether the interface is functional.
	SNMP	Simple Network Management Protocol. Protocol governing network management and the monitoring of network devices and their functions.
	SONET	Synchronous Optical Network. High-speed (up to 2.5 Gbps) synchronous network specification developed by Bellcore and designed to run on optical fiber. STS-1 is the basic building block of SONET. Approved as an international standard in 1988. <i>See also SDH.</i>
	SONET Clock Generator	<i>See SCG.</i>
	SPF	Shortest-path first, an algorithm used by IS-IS and OSPF to make routing decisions based on the state of network links. Also called the <i>Dijkstra algorithm</i> .
	SSH	Secure shell. Software that provides a secured method of logging in to a remote network system.
	SSRAM	Synchronous Static Random Access Memory.
	STM	Synchronous Transport Module. CCITT specification for SONET at 155.52 Mbps.
	STS	Synchronous Transport Signal. Synchronous Transport Signal level 1. Basic building block signal of SONET, operating at 51.84 Mbps. Faster SONET rates are defined as STS- <i>n</i> , where <i>n</i> is a multiple of 51.84 Mbps. <i>See also SONET.</i>
	subnet mask	Number of bits of the network address used for host portion of a Class A, Class B, or Class C IP address.
	Switch Interface Board	<i>See SIB.</i>
	sysid	System identifier. Portion of the ISO nonclient peer. The sysid can be any 6 bytes that are unique throughout a domain.
T	TCP	Transmission Control Protocol. Works in conjunction with Internet Protocol (IP) to send data over the Internet. Divides a message into packets and tracks the packets from point of origin to destination.
	ToS	Type of service.
	traffic engineering	Process of selecting the paths chosen by data traffic in order to balance the traffic load on the various links, routers, and switches in the network. (Definition from http://www.ietf.org/internet-drafts/draft-ietf-mpls-framework-04.txt .) <i>See also MPLS.</i>
	tunnel	Private, secure path through an otherwise public network.
	type of service	<i>See ToS.</i>

U

unicast Operation of sending network traffic from one network node to another individual network node.

UPS Uninterruptible power supply. Device that sits between a power supply and a router (or other piece of equipment) the prevents undesired power-source events, such as outages and surges, from affecting or damaging the device.

V

vapor corrosion inhibitor *See VCI.*

VCI Vapor corrosion inhibitor. Small cylinder packed with the router that prevents corrosion of the chassis and components during shipment.

VCI Virtual circuit identifier. 16-bit field in the header of an ATM cell that indicates the particular virtual circuit the cell takes through a virtual path. Also called a *logical interface*. *See also VPI.*

virtual circuit identifier *See VCI.*

virtual path identifier *See VPI.*

Virtual Router Redundancy Protocol *See VRRP.*

VPI virtual path identifier. 8-bit field in the header of an ATM cell that indicates the virtual path the cell takes. *See also VCI.*

VPN Virtual private network. A set of networking services that enable private, secure communications over public IP networks. VPNs enable organizations to use the Internet securely as part of their network infrastructure by encrypting the traffic that goes over the public network

VRRP Virtual Router Redundancy Protocol. On Fast Ethernet and Gigabit Ethernet interfaces, allows you to configure virtual default routers.

W

wavelength-division multiplexing *See WDM.*

WDM Wavelength-division multiplexing. Technique for transmitting a mix of voice, data, and video over various wavelengths (colors) of light.

weighted round-robin *See WRR.*

WRR Weighted round-robin. Scheme used to decide the queue from which the next packet should be transmitted.

